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**United States Patent** [19]**Lähdemäki et al.****Patent Number:** **6,052,575****[45] Date of Patent:** **Apr. 18, 2000****[54] SYSTEM FOR TRANSMITTING CHARGE INFORMATION TO A WIRELESS SUBSCRIBER VIA A FORWARDED SUPERVISORY SIGNAL****[75] Inventors:** **Heimo Lähdemäki**, Pirkkala; **Timo Kononen**, Tyrnävää; **Jussi Sarpola**; **Olli Lilinamaa**, both of Oulu, all of Finland**[73] Assignee:** **Nokia Telecommunications Oy**, Espoo, Finland**[21] Appl. No.:** **08/930,989****[22] PCT Filed:** **Apr. 12, 1996****[86] PCT No.:** **PCT/FI96/00204**§ 371 Date: **Feb. 9, 1998**§ 102(e) Date: **Feb. 9, 1998****[87] PCT Pub. No.:** **WO96/32822**PCT Pub. Date: **Oct. 17, 1996****[30] Foreign Application Priority Data**Apr. 13, 1995 [FI] Finland **951806****[51] Int. Cl.:** **7 H04Q 7/00****[52] U.S. Cl.:** **455/407; 455/422; 455/550****[58] Field of Search:** **455/405, 406, 455/407, 408, 409, 422, 550; 379/143, 155, 229, 235****[56] References Cited****U.S. PATENT DOCUMENTS**4,640,986 2/1987 Yotsutani et al. **455/407 X**5,046,085 9/1991 Godsey et al. .... **455/407 X**  
5,809,124 9/1998 Bayod ..... **455/407 X****FOREIGN PATENT DOCUMENTS**135196 3/1985 European Pat. Off. ....  
95/20298 7/1995 WIPO .....  
96/03832 2/1996 WIPO .....**Primary Examiner**—Wellington Chin**Assistant Examiner**—Philip J. Sobutka**Attorney, Agent, or Firm**—Pillsbury Madison & Sutro**[57]****ABSTRACT**

The invention relates to a radio system realizing a wireless subscriber interface, the system including a subscriber station (1) which comprises means (8, TRX) for forwarding, on the radio path, a supervisory signal received on the radio path, a base station (5) which monitors the connection to the subscriber station by means of the supervisory signal, and a subscriber network element (6) for transmitting communication signals between a communication system (PSTN) and the subscriber station (1). In order to transmit charging information, the subscriber network element (6) comprises detecting means (9) for detecting a home metering pulse transmitted from the communication system (PSTN), whereby the control unit (11) is arranged to control the supervisory means (10, 14) for sending a charging signal to the subscriber station (5) by means of the supervisory signal in response to detecting the home metering pulse, and the subscriber station (1) comprises a detecting means (12) for detecting the charging signal, and a signal generator (13) responsive to the detecting means (12) for generating and feeding a home metering pulse to the user interface (2) in response to detecting the charging signal.

**9 Claims, 2 Drawing Sheets**